REMARKS

Claims 95, 98, 150 and 155 are pending upon entry of the indicated amendments. Claims 95 and 150 are currently amended. Support for claim 95 can be found throughout the original specification and claims. Support for the amendments to claim 150 are provided in Figure 17 and its original description in paragraph 0061 which indicates that "mTEG" refers to the triethyleneglycol sulfur group and "mTEG-SH" refers to mercapto triethylene glycol. Claims 151-154 have been withdrawn without prejudice to the presentation of their scope in a continuing or divisional application. Claims 99-149 have been withdrawn subject to an earlier restriction requirement. No new matter is entered upon entry of the indicated amendments.

I. Rejections Under 35 U.S.C. 112

Claims 95, 98, 150 and 155 stand rejected under 35 U.S.C. 112, second paragraph, as allegedly being indefinite for the reason that the phrase "mercapto triethylene glycol group that does not have an associated charge in solution" is not clearly described in the specification. Applicants strongly traverse this allegation for the reason that the specification and drawings, especially in connection with Example 26 [par. 0181] very clearly discloses and describes to one of ordinary skilled in the art the meaning of "mercapto triethylene glycol group that does not have an associated charge in solution":

Example 26

> …Results of a second experiment suggested that T_f-TEG-CdTe quantum dots (Thomsen-Friedenreich- and triethylene-glycol-functionalized cadmium-telluride quantum dots, illustrated in Figure 18) selectively bound to endothelial cells. The T_f-TEG-CdTe quantum dots appeared to complex to both resting and activated endothelial cells. Thus, it appeared that the T_f-TEG-CdTe quantum dots exhibited greater cell complexing specificity than the T_f-MAA-CdTe quantum dots. It was hypothesized that the charge associated with a mercaptoacetic acid group in solution results in complexing of T_f-MAA-CdTe quantum dots to certain cells which exhibit little or no binding with the Thomsen-Friedenreich disaccharide itself. By contrast, **the mercapto triethylene glycol group does not have an associated charge**

> **when in solution**. … (Ex. 26, Par. 0181, lines 10-24, emphasis supplied)

Here, the experimental results clearly recite the meaning of the subject phrase for the reason that groups not having associated charges in solution, e.g., triethylene glycol (TEG) and mercapto triethylene glycol (mTEG) have greater cell complexing specificity compared to comparable quantum dots prepared with groups having an associated charge in solution, e.g., mercaptoacetic acid (MAA). Accordingly, Applicants respectfully request that this rejection be withdrawn.

Claim 150 stands rejected under 35 U.S.C. 112, second paragraph, as allegedly being indefinite because the term "mTEG" and mTEG-SH" is an undefined acronym. This rejection is moot in view of the amendment to claim 150.

II. Rejections Under 35 U.S.C. 103

Claims 95, 98, 150 and 155 stand rejected under 35 U.S.C. 103 as allegedly being obvious over Zheng in view of Lin and Bawendi. Claims 95 and 98 stand rejected under 35 U.S.C. 103 as allegedly being obvious over Barrientos in view of Lin, Bruchez, Bawendi and Zheng. Applicants traverse these rejections for the reason that no combination of the references teaches a quantum dot capable of luminescing, comprising a luminescence promoter linked to the surface of the nanocrystalline core, the luminescence promoter comprising a mercapto triethylene glycol group that does not have an associated charge in solution. The cited references can be summarized as follows:

(1) Barrientos attached sugars to gold;

(2) Zheng used short PEGs on gold to prevent non-specific binding;

(3) Bruchez made CdTe quantum dots;

(4) Bawendi functionalized semiconducting nanoparticles with thiols; and

(5) Lin teaches that besides gold nanoparticles, quantum dots "show great potential in biological studies".

There is no combination of the references that teaches quantum dots capable of luminescing which comprise a mercapto triethylene glycol group that does not have an associated charge in solution. At best, the cited references teach the use of ethylene glycol

groups as linkers, and not as separate luminescence promoters bonded to the surface of the nanocrystalline core. The ethylene glycol groups of the claimed invention are used for a different purpose – not as linkers to link ligands to nanoparticles, but as luminescing promoters to make quantum dots luminesce. To be clear, while the luminescence promoters are "linked" to the surface of the nanoparticle, they are not linkers because the term "link" refers to bonding, as set forth in the specification.

> The term "link" refers to an attractive association of an atom or molecule with another atom or molecule, for example, a covalent bond, an ionic bond, a hydrogen bond, or a bond or interaction of another type. [Spec. Par. 0083, as filed]

Furthermore, Applicants contend that the thiol group of an ethylene glycol group does not make quantum dots luminesce (as the office action so implies on p. 5), rather functional groups of the ethylene glycol groups do. Accordingly, the Applincants' recognition that freely-bonded (non-linker) ethylene glycol groups (such as mTEG) make the quantum dots luminesce constitutes a non-obvious inventive step. In contrast, the cited prior art does not disclose, teach or suggest the use of applicants' ethylene glycol groups as a promoter of quantum dot luminescence. Accordingly, Applicants believe that this was a serendipitous discovery and do not believe that this discovery could have been inferred from the cited prior art. Accordingly, Applicants submit that the claimed invention is not obvious in view of the prior art and request that these rejections be withdrawn.

III. Conclusions

Applicants request the amendments and new claims be added and, accordingly to reconsider and withdraw the rejections. Applicants submit that all rejections concerning the patent application have been addressed and urge the examiner to pass the application to allowance. If there are any remaining issues, the examiner is requested to telephone the undersigned attorney.

Respectfully submitted,

Date: November 8, 2011

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